Homeland Security

Broad Agency Announcement (BAA)

Department of Homeland Security
Institute for Discrete Sciences
University Affiliate Centers

INTRODUCTION:
This publication constitutes a Broad Agency Announcement (BAA) as contemplated in Department of Defense Grants and Agreements Regulations (DoDGARS) 22.315. A formal Request for Proposals (RFP), solicitation, and/or additional information regarding this announcement will not be issued. This award will be issued and administered by the Office of Naval Research.

The Office of Naval Research (ONR) and Department of Homeland Security (DHS) will not issue paper copies of this announcement. ONR and DHS reserve the right to select for award all, some, or none of the proposals in response to this BAA. ONR and DHS provide no funding for direct reimbursement of proposal development costs. Technical and cost proposals (or any other material) submitted in response to this BAA will not be returned. It is the policy of ONR and DHS to treat all proposals as sensitive competitive information and to disclose their contents only for the purposes of evaluation.

Awards will take the form of grants. Therefore, proposals submitted as a result of this announcement shall fall under the purview of the DODGARS.

I. GENERAL INFORMATION

1. Agency Name –

Office of Naval Research
875 N. Randolph Street, Suite 1425, Code 254
Arlington, VA 22203-1995

2. Research Opportunity Title - DEPARTMENT OF HOMELAND SECURITY (DHS COOPERATIVE CENTERS) PROGRAM

3. Program Name - Institute for Discrete Sciences - University Affiliate Centers

4. Research Opportunity Number - BAA 06-003

5. Response Dates –

White Papers: December 9, 2005, 4:00 p.m. (Washington DC local time)
Full Proposals: February 24, 2006, 4:00 p.m. (Washington DC local time)

6. Research Opportunity Description –

The DHS Science and Technology (S&T) Directorate invites proposals for research programs on topics of importance to DHS. For this competition, University Programs, a component of S&T, will consider proposals for *University Affiliate Centers* (UACs) to be associated with the DHS Institute for Discrete Sciences (IDS), a multi-institutional research program in the discrete sciences. Successful UAC proposals will be funded as part of the DHS Cooperative Centers Program. Each proposal will specialize in a focused research area in the *discrete sciences,* defined for the purpose of this BAA to include the areas of *information management and knowledge discovery OR discrete simulation, AND including discrete mathematical foundations.*

A. Background

DHS S&T has established a national *Institute for Discrete Sciences* (IDS) to conduct collaborative research in areas of data sciences and discrete simulation applicable to DHS mission needs. When fully realized, the IDS will be a partnership between select national laboratories, universities, and industrial partners. Given the importance of the discrete sciences to DHS mission needs, the establishment of a research program in this area is critical to our homeland security.

The discrete sciences embrace a variety of topics in information management and knowledge discovery, discrete mathematics, and discrete simulation. Initial research topics will include one or more of the following subjects: improved algorithms for data representation and integration to organize and make sense of vast amounts of dynamically changing multi-modal data, semantic graph algorithms, text analysis methods, natural language processing for knowledge discovery, discrete modeling approaches including agent-based modeling for

threat characterization and response planning, and scalable algorithms for data, audio, imagery, and video analysis for DHS applications.

DHS established the national laboratory component of the IDS in FY 2005, bringing together the discrete sciences research activities from the Advanced Scientific Computing (ASC) program in the S&T Threat Awareness (TA) portfolio. The IDS is managed for DHS by Lawrence Livermore National Laboratory in partnership with other Department of Energy (DOE) national laboratories.

The purpose of this BAA is to solicit proposals from U.S. universities for IDS *University Affiliate Centers* (UACs). The UAC program will form the academic component of the IDS. For this competition, University Programs (UP), a component of the S&T directorate, will consider UAC proposals as part of the DHS Cooperative Centers Program. Up to four UACs will be funded. Each UAC is expected to specialize in a well-defined research area in the discrete sciences that is a subset of one of the first two IDS program focus areas described in Section D of this BAA. In choosing the successful UAC proposals, emphasis will be placed on selection of the strongest teams in each specialized area, and in choosing a set of UACs that together cover best the full spectrum of technical areas represented in the IDS program focus areas.

One of the UACs will be chosen to be the Coordinating University Affiliate Center (CUAC). The CUAC will have the responsibility of coordinating the UACs with each other, with the DOE national laboratories, and with the industrial partners in the IDS program.

In general, each UAC will conduct longer term, fundamental research, while the national laboratories will focus on nearer term applied research. The participants of the laboratories will be responsible for integrating research results into the operational capabilities of DHS. In addition to the research component, each UAC will have an educational mission, enhancing DHS workforce development. Industrial and academic partners can be involved, as appropriate, in research, development, and deployment activities and may be included as subcontractors in proposals for this call. The DOE national laboratories are not eligible to participate in the development of the proposal. Nevertheless, in order to foster the exchange of research ideas and the effective integration of academic research results, the UACs are expected, after selection, to interact closely with the participant DOE laboratories through joint research efforts, residential visits, regular research team collaborative meetings, and regularly scheduled IDS workshops.

B. Purpose and Priorities

The IDS is mission-focused and targeted to research areas that leverage the multidisciplinary capabilities of universities and fill gaps in our needed

knowledge, thereby enhancing our preparedness, increasing the efficiency of our operations, assessing more accurately threats and risks, and generally improving the overall security of the nation. UAC proposals, while they should focus on the development of programs that identify and address longer term fundamental research questions, must also clearly tie this research to the mission requirements of DHS.

In particular, the results of this solicitation should help to build a strong collaborative research effort in the discrete sciences, involving close interaction among the national laboratories, academic researchers, and industry. We view the formation of such a collaboration as essential to the advancement of the technology needed to process and analyze vast amounts of data from multiple, disparate sources that may provide critical insights into threats and vulnerabilities of the nation to terrorist activities.

C. Outcomes and Deliverables

DHS is a mission agency. Thus proposals should address outcomes and deliverables such as knowledge, tools, models, and strategies that will enhance DHS's ability to accomplish its mission of securing the Nation against terrorism. Inquiries presented in Section A are illustrative and not exhaustive. Successful proposals will creatively prioritize and design deliverables to address the concerns described herein.

D. Program Elements

The IDS will conduct research activities on topics in discrete sciences, interpreted broadly but focused on areas determined by DHS to be of greatest importance. These topics are discussed briefly below, and grouped into the areas of:

1. Information Management and Knowledge Discovery,
2. Discrete Simulation, and
3. Discrete Mathematical Foundations.

The proposal for a UAC must select target research areas from either topic area 1 (Information Management and Knowledge Discovery) or topic area 2 (Discrete Simulation) below, and in addition should be supported by the inclusion of selected longer-term research issues described in topic area 3 (Discrete Mathematical Foundations). An offeror must select topics from **either** topic area 1 **or** 2, **and** 3; if the offeror is interested in both areas 1 and 2, that offeror must submit separate proposals for area 1 and for area 2, and each of these two proposals must contain topics from area 3. Offerors cannot submit proposals just for topic 3.

1. ***Information Management and Knowledge Discovery (IM&KD) Program Area.*** Information management refers to improved algorithms for organizing

and making sense of vast amounts of dynamically changing multi-modal data, while knowledge discovery refers to the extraction of information from multi-modal sources and information fusion. One particular area of interest is algorithms for generating and exploiting relationship information from semantic graphs. A UAC proposal in the IM&KD area should specialize among a number of the following topics:

a. **Architecture and management of databases for large-scale datasets,** including issues associated with distributed databases and ingestion of large volumes of data from both structured and unstructured sources.

b. **Data access technologies**, including methods for improving data access times through access pattern specification and indexing, approximate query strategies designed to provide flexible response times, enhanced data context and association through metadata annotations and analysis of real-time, transient data in data streams.

c. **Data integration and data fusion**, including approaches for imposing semantic structure on data repositories or streams in order to make data analysis easier to interpret in context, methods for reducing creation and maintenance costs associated with generating a consistent, integrated view of data sets from multiple sources, approaches for defining data integration reference architectures, techniques for building associations and correlations across multi-modal data sources, and improved approaches for data aggregation and summarization in order to enhance understanding.

d. **Real-time management of sensor data streams.** Approaches for managing data in real time from potentially very large data streams coming from remote sensor networks.

e. **Scalable algorithms and interfaces for information retrieval and analysis,** such as scalable algorithms for the discovery of complex relationships between nodes, efficient query languages for multiple data representation schemes, and the integration of simulation results.

f. **Models for detection, prediction and discovery** including detection of missing or incorrect data, statistical prediction of attributes, links and graph patterns, identification of anomalous nodes or relationships, models that incorporate temporal or spatial effects, statistical and machine learning models for determining organization structure, and finding portions of the graph that are undergoing abrupt changes.

g. **Alternative approaches to the semantic graph** for information representation and relationship discovery.

h. **Algorithms to support unstructured text analysis and natural language processing for information extraction**, including methods

for guided or automatic document annotation, semantic analysis algorithms, algorithms for solving co-references and algorithms for resolving entities.

i. **Incorporation of visual analytic techniques**, where visual analytics is the science of analytical reasoning facilitated by interactive visual interfaces. (Proposals in the IM&KD area might include plans for interaction with the National Visual Analytics Center, or its affiliate centers, see http://nvac.pnl.gov/)

j. **Data accuracy, validation and uncertainty quantification**, including improved methods for modeling and tracking data provenance, methods for improving data quality through noise reduction and data cleaning and improved algorithms for determining conclusions supported by a body of information and for defining a level of confidence to be placed on those conclusions.

2. ***Discrete Simulation Program Area.*** Discrete simulation technology, such as entity-based simulation or discrete event simulation, can be applied to DHS needs for threat characterization, risk analysis and incident management training. Topic areas could include multi-dimensional, scale-free representations and models accommodating complex signature spaces. A UAC proposal in the discrete simulation area should specialize among a number of the following topics:

   a. **Scalable algorithms and software solutions for discrete simulation.** New discrete simulation algorithms and software solutions will be required to support threat characterization, risk analysis and training. Scalability of such algorithms with respect to the number of entities and interactions, the number of physical processes or simulations included in the scenario, the number of data sources, the need to incorporate real-time sensor data, and the network bandwidth and quality of service to the users should be considered.

   b. **Integration of multiple simulation paradigms within a simulation.** Research in this area will address the mathematical and computer science issues involved in the coupling of multiple technologies into a single decision support environment for understanding complex threats and vulnerabilities. This area might also consider the development of software infrastructure to support integration, interoperability, federability, and scalability. Research in this area must also consider provisions for incorporating existing models and accommodating their heterogeneous interface requirements and for smoothly trading off performance vs. resolution.

   c. **Uncertainty quantification techniques for discrete simulation.** Methods for understanding and establishing the level of confidence

associated with discrete simulations will be critical, particularly when these simulations will be used to support high-consequence decisions.

3. ***Discrete Mathematical Foundations*** are longer-range research activities that support the two major IDS Program Areas described above. Elements of some of the discrete mathematical foundations listed below should be considered by each UAC proposal.

    a. **Understanding complex adaptive systems.** Complex adaptive systems are characterized by the interactions of individual agents and elements that tend to self-organize, leading to evolutionary, emerging, and adaptive properties. Research directed at understanding complex adaptive systems will support the understanding of these systems, and also aid in the development of reduced-order systems that approximately model complex behavior but at significantly reduced cost.

    b. **Integration of IM&KD tools with simulation technologies.** A key to developing understanding from massive amounts of complex data can be the integration of analysis tools based on simulation technologies with IM&KD tools. A framework that enables such integration and ensures the consistency of the data models is a research challenge.

    c. **Resource-constrained computing.** DHS solutions will often be characterized by the use of constrained resources in operational environments. Also, discrete simulation and data analysis tools of interest to DHS may need to be used interactively, for example for training purposes in advance of a crisis, or during a crisis for operational planning. Tradeoffs between model fidelity and model response must be considered, and a multi-scale approach to designing these simulations may be necessary.

    d. **Pattern recognition algorithms**. Many DHS applications require tools for the recognition or discovery of patterns in diverse types of data streams, including video, fixed images and text. Scalable algorithms for pattern recognition and feature extraction for DHS applications in surveillance are needed. Pattern recognition is important in image analysis of experimental data. Techniques for the extraction of objects and anomaly detection in fixed images and video data are needed for surveillance purposes.

    e. **Novel hardware architectures**. In general, the target applications for most of today's supercomputers have a different character than the emerging applications of interest to DHS. Many of these emerging applications are discrete in nature, and may require different computer architectures. Research that addresses the development or utilization of novel architectures that will be tailored to solving discrete

problems, most notably knowledge discovery via semantic graph technology, is of interest.

f. **Combinatorial optimization techniques**. Development and application of combinatorial optimization techniques for scenario planning and incident response. Potential applications include facility location logistics, supply distribution, and real-time resource allocation.

g. **Uncertainty quantification techniques.** In addition to focusing on uncertainty quantification or the determination of confidence measures for each topic area above, the consideration of general approaches for the quantification of uncertainty for problems within the scope of the IDS might be considered.

E. Educational Program

The nation needs to build the intellectual capital and workforce capacity at all levels for research, education, and training on Homeland Security issues. This program element should describe how the UAC will educate, train and mentor the next generation of scholars to meet the challenges in multidisciplinary sciences related to Homeland Security. Sub-elements within this element include integration of education and research across all aspects of the program, personal and professional skills development, internships, communication skills and cross-disciplinary training. Recruitment, mentoring and eventual graduation of individuals from under-represented minority groups are of significance.

The educational component of the UAC should map well onto the organization of the IDS, including its laboratory and industrial partners. The IDS will support academic researchers in a variety of ways. A component of each UAC should be the requirement of a number of residential visits by its faculty, postdoctoral researchers, and students to the participating laboratories to work in areas of mutual interest. This component of the UAC program is designed to ensure the relevance of the academic participants' activities to IDS and DHS goals. It also affords the postdoctoral fellows and students an opportunity to see the laboratories and DHS first hand, and in so doing, will serve an important recruiting function.

F. Scope of University Affiliate Centers

The IDS University Affiliate Centers are expected to become the focus of the efforts pertaining to a designated subject area, and to cooperate with other UACs and the DOE laboratories active in the IDS. While the overall IDS University Affiliate Centers program is expected to cover most, if not all of the IDS program focus areas described in section D, each UAC is expected to specialize in a particular area of the discrete sciences, and should not attempt to

cover the breadth of the IDS program focus areas. Information about the DOE laboratory activities of the IDS can be found at https://www.llnl.gov/car/IDS.

One UAC will be designated as the Coordinating University Affiliate Center (CUAC) and will be responsible for coordinating activities among the consortium of UACs and between the UACs and the DOE national laboratories and industrial partners in the IDS program. To be considered for the role of CUAC, a UAC proposal should explicitly indicate this and should include a clear plan for leading and coordinating the consortium. Proposals may request up to $200,000 per year for this additional responsibility.

Institutions requesting consideration for the role of CUAC may define and scope that role as they deem appropriate, but CUAC responsibilities should include the following at a minimum:

- In collaboration with IDS laboratory and industrial partners, plan activities to support and promote interaction and collaboration among IDS members, e.g., through meetings of Principal Investigators
- Develop, gather, and maintain, as required, IDS website content for UAC projects
- Arrange and coordinate IDS UAC unified representation in appropriate venues such as DHS S&T conferences
- Coordinate IDS UAC participation in the Integrated Network of DHS National Research and Education Centers (INC), a venue for technical and educational interchange among the DHS Centers sponsored by the DHS Office of University Programs

The UACs will work with DHS largely through interactions with the IDS management at Lawrence Livermore National Laboratory. Each center should encompass an institution or consortium of institutions that is capable of:

- Effectively addressing the educational elements and a well-defined subset of the program focus areas elaborated in section D
- Developing a strong outreach program
- Sustaining a robust publication program

G. References

- Public Law 107-296 (Homeland Security Act of 2002, as amended).

7. Point(s) of Contact:

Questions of a technical nature shall be submitted in writing (via email) and directed to the cognizant Technical Point of Contact as specified below:

Technical Point of Contact:
Laura Petonito
Deputy Director
University Programs
Fax Number: 202-254-6163
Email: universityprograms@dhs.gov

Questions of a business nature shall be submitted in writing (via email) and directed to the cognizant Contract Specialist, as specified below:

Business Point of Contact:
Ms. Emily McLaughlin
Contract Specialist
Division of Contacts and Grants
Code 254
875 N. Randolph Street, Suite 1425, Code 254
Arlington, VA 22203-1995
Telephone Number: 703-696-7827
Fax Number: 703-696-0993
Email: Emily_mclaughlin@onr.navy.mil

8. Instrument Type -

The awards will take the form of grants.

9. Catalog of Federal Domestic Assistance (CFDA) Numbers -

97.061

10. Catalog of Federal Domestic Assistance (CFDA) Titles -

Centers for Homeland Security

11. Other Information – N/A

II. AWARD INFORMATION

Total amount of funding anticipated: $ 10,200,000 spread over three years ($800,000 annually for each UAC, plus an extra $200,000 per year for the CUAC)
Anticipated number of awards: 4 awards
Anticipated period of performance: 3 years

III. ELIGIBILITY INFORMATION

Proposals must be university-based and submitted by U.S. academic institutions that have the ability and capacity to conduct scientifically valid research. A single academic institution must be identified as the lead and the single entity for proposal submission and subsequent discussions. Additional institutions associated with the lead institution will be subawardees from the lead institution. Cost sharing is not required.

IV. APPLICATION AND SUBMISSION INFORMATION

1. Application and Submission Process

White Papers - A white paper indicating a potential offeror's intent to submit a proposal is required. The white paper must be submitted by December 9, 2005, 4:00 pm (Washington DC local time) to http://www.orau.gov/dhsids. Its intent is to preclude unwarranted effort in preparing full technical and cost proposals without an initial assessment of the merit and relevance of the concept.

White papers will be reviewed by DHS for appropriateness of subject area, viability of the proposed execution plan, relevance to DHS mission and strategy. Feedback will be provided to the Principal Investigator by January 16, 2005. The response will be in one of three basic categories:

1. Request to submit a full proposal based on the white paper.
2. Request to revise the proposed scope of the white paper and submit a full proposal.
3. Proposers are discouraged from submitting a full proposal in this area.

Full Proposals - The due date for receipt of Full Proposals is February 24, 2006, 4:00 p.m. (Washington DC local time) to http://www.orau.gov/dhsids. It is anticipated that final selections will be made before the end of April 2006. As soon as the final proposal evaluation process is completed, the successful offerors will be notified via email or letter of their selection. Issuance of grants will follow.

2. White Papers and Full Proposals - Format and Content

The Proposals submitted under this BAA must not contain any classified information. The Proposal submissions will be protected from unauthorized disclosure in accordance with applicable laws and DoD/DoN regulations. Offerors are expected to appropriately mark each page of their submission that contains proprietary information.

White Paper Format and Content

The white paper should include:

- A descriptive title of the proposal (not merely reflecting the title of this solicitation).
- A title page which would include the words "White Paper", the BAA number, the name, address, phone, fax, and email of the Principal and Co-Investigator.
- The name(s) of Institution(s) participating in the proposal.
- A short (no more than ½ page) abstract of the proposal.
- At least three pages but no more than five pages in length providing a high-level outline of the planned effort and the execution plan. The outline should include a section on plans for executing the responsibilities of the Coordinating UAC if that role is desired.
- Format: 8.5 x 11 inch paper, 1 inch margins, double-spaced, 12 point font Times New Roman.
- The names and short vitae of key personnel.

The title page, abstract and curriculum vitae are not counted in the three to five page limitation.

Full Proposal Format – Volume 1 – Technical and Volume 2 – Cost Proposal

All proposals for University Programs, Science and Technology funding must be self-contained within specified page limitations. Internet web site addresses (URLs) may not be used to provide information necessary to the review because reviewers are under no obligation to view the Internet sites.

Proposal Guideline Preparation: Use the following guidelines to prepare a proposal. Proper preparation of a proposal will assist reviewers in evaluating the merits of each proposal in a systematic and consistent manner.

- Paper Size – 8.5 x 11 inch paper
- Margins – 1" inch
- Spacing – double-spaced
- Font – Times New Roman, 12 point
- Number of Pages – There are no page limits to either Volume 1 or Volume 2; however, if page limits are specified for a section, they should be strictly observed.

Full Proposal Content

Volume 1: Technical Proposal

Each section of the Technical Proposal must start on a new page.

- **Cover Page:** This must include the words "Technical Proposal" and the following:
  1) BAA Number;
  2) Title of Proposal;

3) Identity of prime Offeror and complete list of sub-awardees, if applicable;
4) Technical Contact (name, address, phone/fax, electronic mail address);
5) Administrative/business contact (name, address, phone/fax, electronic mail address) and;
6) Duration of Effort

- **Table of Contents:** The Table of Contents should contain page numbers for each major component of the proposal.

- **Proposal Summary (up to 3 pages)**: The proposal summary must include: (1) the title of the proposal; (2) the names and contact information of the Principal Investigator (Director) and Co-PI (if any) from the lead institution; (3) a list of the major collaborating partner institutions with the name of the lead investigator from each; (4) an expanded list of participants and their affiliation; and (5) an informative abstract of the proposed research and education effort in sufficient detail so as to be appreciated independently of the main proposal. Other key elements should include specific research and education goals, a timeline for their achievement and dissemination, management structure, education plan, and explicit plans for each major cooperating partner in the proposed UAC. The role of the UAC in articulating and disseminating results should be addressed along with proposed approaches for collaboration with the existing Centers of Excellence.

- **Proposal Description (up to 15 pages):** This section should include statements of work with planned approaches and expected timelines to attain stated goals. Further, since this description is the most important part of the proposal, particular attention should be paid to the following issues:
  - DHS has mission-oriented responsibilities; therefore the proposed research and education should be explicitly related to the DHS mission of ensuring security in the face of terrorist acts;
  - The role of the coordinating UAC, if sought, is to be realized effectively and comprehensively and detailed plans for that realization should be described;
  - The collection of major collaborators and participating investigators must be of the highest quality, and ideally should involve individuals (faculty, undergraduate and graduate students) from underrepresented groups; and
  - The education program must be fully integrated with the research and adequately address the preparation of the graduates to meet the future needs of Homeland Security.

- **Assertion of Data Rights:** Include a summary of any proprietary rights to pre-existing results, prototypes, or systems supporting and/or necessary for the use of the research, results, and/or prototype. Any rights made in other parts of the proposal that would impact the rights in this section must be cross-referenced. If there are proprietary rights, the Offeror must explain how these affect its ability to deliver subsystems and toolkits for integration. Additionally, Offerors must explain how the program goals are achievable in light of these proprietary and/or restrictive limitations. If there are no claims of proprietary rights in pre-existing data, this

section shall consist of a statement to that effect. Offerors are expected to mark each page of their proposal that contains proprietary information.

- **Deliverables:** A detailed description of the deliverables, such as progress reports.

- **Management Approach:** A discussion of the overall approach to the management of this effort, including brief discussions of the total organization; use of personnel; project/function/sub-awardee relationships; and government research interfaces.

  (a) Management Plan: If adequate coverage of the subject areas warrants it, collaborative multi-institutional proposals are encouraged. Include a list of consortia members, higher education minority-serving institutions, and higher education institutions in EPSCoR ("Experimental Program to Stimulate Competitive Research") States. The offeror should identify each institutional unit contributing to the proposal and clearly define the roles and responsibilities of each unit. This section of the proposal should convincingly demonstrate that the proposed collaborative partnerships are adequately integrated and that the participating institutions fully support, through words and deeds, the serious time and resource commitment needed to ensure timely and meaningful progress toward a successful program in research as well as education. This demonstration should include describing linkages and communication approaches among the various units and a plan to identify and benefit from complementary activities and knowledge from all units. Assurances must be provided that the research programs will meet the proposed tasks and time requirements, recognizing the special nature of university research. Participating investigators must be linked to each of the specific tasks.

  Note: Discussions and planning with the Department of Energy (DOE) National Laboratories must not take place prior to the Center award as these National Laboratories have insider information and receive separate funds from DHS. Following an award, the National Laboratories can be expected to be a resource for the named Center. Also, the management plan may include regional and national partnerships with local, state, and national emergency response communities and other appropriate organizations and agencies.

  (b) Education: The Nation needs to build the intellectual capital and workforce capacity at all levels for research, education, and training in mission-relevant areas. This program element should describe how the UAC will educate, train, and mentor the next generation of scholars (undergraduate and graduate students) to meet the challenges in multidisciplinary sciences related to Homeland Security. DHS is particularly interested in models for sustainable programs in higher education whose curricula will address disciplines and subject areas of special importance to Homeland Security. Sub-elements within this element include the integration of education and research across all aspects of the program, personal and professional skills development, internships, communication skills development, and cross-

disciplinary training. Also, of particular interest to DHS are recruitment, active involvement and mentoring, and eventual graduation of individuals from underrepresented groups.

(c) Proposal Timetable: The proposal should outline all important phases as a function of time, year by year, for the entire performance period.

- **Key Performers:** The Director of each UAC is expected to commit a significant amount of his/her time to the Center, and assurances from the university to this end are welcomed. Please provide cogent descriptions of the relevant capabilities of each of the principal investigators and other key personnel. A two-page vitae of key consortia members, including the principals and key personnel, should be complete enough to show the necessary expertise to conduct the proposed work. For all other significant participants, up to 30 individuals, a 1-page description of each is allowed. Each description should include information sufficient to demonstrate that the key participating personnel possess training and expertise commensurate with their roles in the program. A short paragraph by each key person on his or her specific role in the proposed effort is necessary.

- **Letters of Agreement:** Offerors should include Letters of Agreement from all sub-awardees (e.g., schools) and consultants. Letters of Agreement should include enough information to make it clear that the author of the letter understands the nature of the commitment of time, space and resources to the research project that will be required.

- **Facilities:** All facilities that are available for use or assignment to the proposal during the requested period of performance should be reported and described briefly. In addition, new items of non-expendable equipment needed to conduct and bring the proposal to a successful conclusion should be listed, including their individual costs of acquisition. Justification must be provided if funds exceeding $10K are requested for the acquisition of any particular capital equipment item.

- **Human Testing:** The Offeror must outline its established procedures for arranging for human subject testing, including all reviews and appraisals to be obtained before any such testing would begin. Further, the protection of data relating to human subjects or groups must also be addressed. Any potentially hazardous materials, procedures, situations, or activities, whether or not directly related to a particular phase of the effort, must be explained fully, along with an outline of the precautions to be exercised. Examples include work that may put human subjects at risk. All major instrumentation available for use or assignment to the proposed effort should be itemized.

- **Other Agencies:** Include the name(s) of any other agencies to which the proposal has also been submitted.

Volume 2: Cost Proposal

The Cost Proposal shall consist of a cover page and will provide a detailed cost breakdown of all costs by cost category by calendar or Government fiscal year.

Cover Page: The words "Cost Proposal" should appear on the cover page in addition to the following information:

- BAA Number;
- Title of Proposal;
- Identity of prime Offeror and complete list of sub-awardees, if applicable;
- Technical Contact (name, address, phone/fax, electronic mail address);
- Administrative/business contact (name, address, phone/fax, electronic mail address);
- Duration of Effort

Part 1: Detailed breakdown of all costs by cost category by calendar or Government fiscal year):

- Direct Labor – Individual labor category or person, with associated labor hours and unburdened direct labor rates;
- Indirect Costs – Fringe Benefits, Overhead, G&A, COM, etc. (must show base amount and rate);
- Travel – Number of trips, destinations, duration, etc. Proposers should budget for *up to* three (two-day) meetings each year in Washington, D.C., Livermore, CA, or other locations with IDS Laboratory participants and other IDS UACs;
- Sub-awardees – A cost proposal as detailed by the Offeror's cost proposal will be required to be submitted by the sub-awardee. The sub-awardee's cost proposal can be uploaded separately or will be requested from the sub-awardee at a later date;
- Consultant – Provide consultant agreement or other document which verifies the proposed loaded daily/hourly rate;
- Materials – Specifically itemized by cost. An explanation of any estimating factors, including their derivation and application, shall be provided. Where possible, indicate purchasing method (competition, price comparison, market review, etc.);
- Other Directs Costs, particularly any proposed items of equipment or facilities. Equipment and facilities generally must be furnished by the recipient. (Justifications must be provided when Government funding for such items is sought.) Where possible, indicate purchasing method (competition, price comparison, market review, etc.);
- Grant specific costs – Costs such as Graduate Assistant tuition, laboratory fees, reports, and publication costs.

3. Significant Dates and Times—

White Papers must be received on or before December 9, 2005 by 4:00 p.m. (Washington DC local time). Full proposals must be received on or before February 24, 2006 by 4:00 p.m. (Washington DC local time).

4. Submission of Late Proposals –

Electronic submission of proposals is required, as described below. Any proposal, modification, or revision, that is received at the designated Government office after the exact time specified for receipt of proposals is "late" and will not be considered.

5. Address for the Submission of White Papers and Full Proposals –

Potential Offerors should check the following site for information about the electronic submission procedures for the proposal: http://www.orau.org/dhsids. Access to upload either a White Paper or Proposal requires a user ID and password. To obtain a user ID and password, the authorized signing official or other sponsored research officer must contact the helpdesk by phone during normal business hours (Monday - Friday, 8:00AM - 4:00pm Washington DC local time) at (865) 576-6200.

Note: Only full proposals submitted electronically to the ORAU web site will be considered.

V. EVALUATION INFORMATION

1. Evaluation Criteria

The goals of the Department of Homeland Security Centers of Excellence program are to contribute to specific areas that leverage the multidisciplinary capabilities of universities filling gaps in knowledge, enhancing the Nation's ability to counter terrorist attacks, and providing overall security to the Nation. Also, DHS envisions that the education plan is integrated into the Center's research activities and addresses the need to prepare the next generation of diverse scholars, scientists, and engineers to meet present and future challenges of Homeland Security. This should involve consideration of gender, race, ethnicity, and economics.

Reviewers will be expected to assess the following aspects of an application in order to judge the likelihood that the proposed research and education will have a substantial impact on the theme of the program announcement.

- **Significance**

Does the proposal make a compelling case for the potential contribution to the solution of the problem(s) addressed in the BAA?

- **Research Plan**

Does the research plan meet the requirements described in the BAA sections: Purpose and Priorities, Outcomes and Deliverables, and Program Elements?

- **Educational Plan**

Does the education plan address the objectives of producing well qualified graduates (undergraduate and graduate students) in disciplines affecting the future of Homeland Security, and is it well integrated at all levels with the research?

- **Management Plan**

Does the management plan convincingly demonstrate that the collaborative partnerships and linkages are truly integrated, and meaningfully include minority-serving institutions in the access to research and education? Does the commitment of each partner show support for the implementation and success of the project?

- **Personnel**

Do the descriptions of the personnel make it apparent that the Principal Investigator and other key personnel possess the training, knowledge, experience, and time commitment to competently implement the proposed research?

- **Resources**

Are the facilities, equipment, supplies, databases, and other resources to support the proposed activities adequate?

Additional Criteria for Decisions

The following will also be considered in making the award decisions:

- Scientific merit as determined by the external and internal peer reviews;
- Relevancy to the mission of DHS as determined by internal peer review;
- Management effectiveness as determined by site visits;
- Contribution to the overall program of research and education as described in this BAA; and
- Availability of funds

2. Evaluation Panel and Process

Restrictive notices notwithstanding, one or more support contractors may be utilized as subject-matter-expert technical consultants. Similarly, support contractors may be utilized to evaluate cost proposals. However, proposal selection and award decisions are solely the responsibility of Government personnel.

White papers will be reviewed by DHS. Full proposals will be submitted to the usual review process of DHS University Programs. These proposals are always reviewed by panels (external and internal) composed of professional peers, who have been screened for conflicts of interest. In addition, panel reviews may be augmented by one or more reviews solicited by mail by the Program Officer and made available to the panel reviewers once they convene. As a general rule, peer reviewers are authorized to consider the comments made by other reviewers and the evaluations of mail reviewers, as read during the panel discussion, to finalize their individual evaluations. Typically panel members are provided with only a few of the proposals for which each reviewer is specifically tasked to read and report in detail during the meeting of the group. At a minimum, there are two reviewers for each proposal. In all cases, however, copies of every proposal are available for inspection by all of the members of the external panel while it is in session. The panel summary report of each external review panel is reviewed by the attending DHS official to verify it is an accurate compilation of individual reviewers' significant discussion points. In addition to this external review,

DHS will conduct an internal review. The internal review by peer government personnel for relevancy is used to augment the external panel review, and will be used to select finalists who will be invited to a "reverse" site review in Washington D.C., at which the principal investigator and core team will present the UAC proposal to DHS personnel. The definitive selection will be made by DHS officials based upon the proposal, the external peer review, internal Federal agency review, and the reverse site visit. Any other materials, including external letters of support, **will not** be considered as part of the review process.

During the peer evaluation process, extreme care will be taken to prevent any actual or perceived conflicts of interest that will impact review or evaluation of the proposals. For the purpose of determining conflicts of interest, potential reviewers are asked to complete and sign conflicts of interest and nondisclosure forms.

Names of submitting institutions, partner institutions and participants, as well as application content and peer evaluations, will be kept confidential, except to those involved in the review process, to the extent permitted by law. In addition, the identities of peer reviewers will remain confidential. Therefore, the names of the reviewers will not be released.

VI . AWARD ADMINISTRATION INFORMATION

1. Administrative Requirements -

- CCR - Successful Offerors not already registered in the Central Contractor Registry (CCR) will be required to register in CCR prior to award of any grant. Information on CCR registration is available at http://www.ccr.gov or by calling 1-888-227-2423.

- Certifications – Proposals should be accompanied by a completed certification package which can be accessed on the ONR Home Page (www.onr.navy.mil) under Contracts & Grants. For grant proposals, the certification package is entitled, "Certifications for Grants and Agreements."

2. Reporting –

The following deliverables, primarily in awardee format, may be anticipated as necessary. However, specific deliverables should be proposed by each Offeror.

- Technical and Financial Progress Reports
- Monthly Progress Reports
- Presentation Material
- Other Documents or Reports
- Final Report

VII. OTHER INFORMATION

1. Government Property/Government Furnished Equipment (GFE) and Facilities

Each Offeror must provide a very specific description of any equipment/hardware that it needs to acquire to perform the work. Also, this description should identify the component, nomenclature, and configuration of the equipment/hardware that it proposes to purchase for this effort. The purchase on a direct reimbursement basis of special test equipment or other equipment will be evaluated for allowability on a case-by-case basis. Maximum use of Government integration, test, and experiment facilities is encouraged in each of the Offeror's proposals.

Government research facilities and operational military units are available and should be considered as potential government furnished equipment/facilities. These facilities and resources are of high value and some are in constant demand by multiple programs.

2. Security Classification

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible.

3. Use of Animals and Human Subjects in Research

If animals are to be utilized in the research effort proposed, the Offeror must be aware that a completed DoD Animal Use Protocol with supporting documentation (copies of AAALAC accreditation and/or NIH assurance, IACUC approval, research literature database searches, and the two most recent USDA inspection reports) requires a DoD veterinarian review/approval prior to award. Similarly, for any proposal that involves the experimental use of human subjects, the Offeror must obtain approval from the Offeror's committee for protection of human subjects (normally referred to as an Institutional Review Board, (IRB)). The Offeror must also provide documentation of a Multiple Project Assurance or a Federal Wide Assurance along with informed consent forms covering the proposed human subjects study. If the Offeror does not have a Federal Wide Assurance, a DoD Single Project Assurance for that work must be completed prior to award.

4. Recombinant DNA

Proposal which call for experiments using recombinant DNA must include documentation of compliance with DHHS recombinant DNA regulations, approval of the Institutional Biosafety Committee (IBC), and copies of the DHHS Approval of the IBC letter.

5. Export Controlled Technology

Potential Offerors under this announcement are reminded of the Export Administration Regulations, the International Traffic in Arms Regulations, and DoD regulations

restricting the release of critical technologies, including technical data, to foreign nationals.

6. Intellectual Property

The successful Offeror will be subject to applicable regulations governing patents and inventions, including Government-wide regulations issued by the Department of Commerce at 37 CFR part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements."

7. Funding Restrictions

Funds awarded under this program may not be used for the renovation or refurbishment of research or education space; the purchase or installation of fixed equipment in such space; or the planning, repair, rehabilitation, acquisition, or construction of buildings or facilities.